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PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

A Device for Connecting Rod Shaped Objects, Namely Cigarettes with Filters or Mouth Pieces

We ZAVODY V.I. LENINA PLZEN, NARODNI PODNIK, a Czechoslovakian body corporate of Plzen, Czechoslovakia, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a device for connecting rod shaped objects, particularly cigarettes with filters or mouth pieces, by encircling the aligned elements by a paper band in order to provide combined units. Such units may be filter tip cigarette units, or other rod-like parts such as chocolate rods with mouth pieces attached to resemble cigarettes, or even menthol rods with mouth pieces.

Hereinafter the invention will be described and claimed as a device for producing filter tip cigarettes, but it is to be understood that the device may be used in the manufacture of other united rod-like articles.

In the course of manufacture of cigarettes with filters or mouthpieces, it is necessary to use special machines, whereby twin filter or mouthpiece inserts are placed between two cigarettes and the thus aligned elements are encircled along their outer circumference with a paper band, usually a band of cigarette paper, provided previously with some glue so that these elements are connected to form an independent unit which is cut into two filter or mouthpiece cigarettes after all other manufacturing operations have finished.

Until now a number of different methods and a number of different devices have been used for this purpose. Of known methods, those most used are provided with a moving conveyor or endless belt together with a straight or curved ledge or plate, or two reciprocally turning cylinders or rollers, and the encircling is finally performed in grooves of cylinders, the shape and dimensions of which are adjusted for different systems and between a counter-supporting surface, guide means and the like.

The known devices for performing these operations are complicated as they require several drives, in given cases at different speeds, and different elements for aligning the connected parts and usually several cylinders. In such devices where the encircling is effected by rolling the groups of two cigarettes with a filter between them in grooves on a cylinder, complications often arise in supplying the encircling paper bands. These can be supplied in this case either from above or from below, while each of the methods influence respectively the overall conception of the device. In all these arrangements however, the perfect shape and encircling of the rolled unit, i.e. of the filter or mouthpiece cigarette is not safeguarded, as it is not guaranteed that both of the parts to be connected are exactly aligned and rolled up so as to form an exactly coaxial product.

An object of the present invention is to obviate or mitigate the aforesaid disadvantages.

The present invention is a device suitable for encircling or wrapping cigarette and filter units with paper or the like which device comprises in combination, a rotatable working cylinder provided with shallow transverse grooves longitudinal with respect to the axis of the cylinder, suction channels entering the grooves for applying a reduced pressure to them, thereby to retain the encircled units within the grooves, a fixed guide means presenting to the cylinder a working surface that is spaced from the cylinder and is coaxial therewith, and an abutment carried on the working surface of the guide means to extend into the space between the latter and

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the cylinder, the longitudinal axis of the abutment being parallel with the grooves of the cylinder.

The supply of the individual parts to be encircled to the working cylinder or to its grooves respectively, and furthermore the removal of the already encircled units and the cutting of the encircling paper from bands rolled off from bobbins is taken care of by known devices.

An embodiment of the invention will now be described by way of example with reference to the accompanying drawing:—

Referring to the drawing a device for the encircling of rod shaped objects, namely of filters and cigarettes for the manufacture of filter cigarettes comprise a main working or encircling cylinder 1, provided on its circumference with shallow transverse grooves 2. Sucking channels 3 terminate at these grooves in a known way so that the encircled objects are maintained in the groove.

The required band 4 of encircling paper, wound off from a bobbin is placed on the cylinder 1 so that its leading edge extends beyond one of the shallow grooves 2, or it can be placed behind the shallow groove in the direction of rolling. The filter insert is, in the course of supply of the cigarette unit, placed directly upon the encircling paper. The remaining part of the encircling device includes rotary knives 5 for cutting the encircling band from the bobbin, the feed cylinder 6 which supplies the cigarettes and filter inserts to the shallow grooves 2 which are covered by the band of encircling paper and the guide means 7 between which and the main cylinder 1 the cigarettes with the insert and the encircling paper band is rolled and encircled, and finally a discharge cylinder 8 which is of a type commonly known for finishing filter cigarette manufacture. The guide means 7 is, however, additionally provided with an abutment 9 extension inwardly from the working surface to the guided parallel with the axis of the grooves of the cylinder.

The rolling starts when the as yet not encircled unit, (i.e. two cigarettes with an aligned twin filter at the centre, which are placed into the shallow groove 2 upon a strip of the encircling band) strikes the abutment 9 which causes both cigarettes and the twin filter insert lying between them to be rolled out from the shallow groove 2 due to the rotation of the main cylinder 1. It will be understood that when the twin cigarette unit contacts the abutment 9 it is subject to temporary deformation on its cross section due to pressure against the abutment. Continued rotation of the cylinder 1, however quickly rolls the cigarettes and filter under the abutment i.e. from one side to the other thereof, whereupon the natural resilience of the tobacco and tip material rapidly restores the circular cross section. The twin cigarette unit will during this step, have become displaced from its groove, thus the encircling of the cigarette unit by the cigarette paper is started. As the abutment 9 is arranged on the guide means 7 so that its longitudinal axis is parallel with the axis of the groove 2 of the main cylinder 1, it assures the rolling up of all three parts of this unit, (i.e. of two cigarettes and of the twin filter insert in between) and that this rolling starts at the same moment, so that a perfect encircling of the unit is obtained.

Towards the completion of the rolling up operation, the encircled unit drops into the following groove 2 of the main cylinder 1 in the direction of the rolling up, i.e. in the direction opposites to the rotation of the main cylinder 1. This groove in a similar manner will then have been emptied as it passed the abutment, i.e. the position where its originally contained unit has left the groove and the rolling up of the latter unit has started. The encircled unit first referred to above is again maintained in the groove of the cylinder into which has dropped by a known method, for instance by suction and can be thereafter transmitted in a known way to further working cylinders 8 for further treatment, e.g. for cutting the encircled unit to two filter cigarettes, and finally for ejection from the machine.

WHAT WE CLAIM IS:—

1. A device suitable for encircling or wrapping cigarettes and filter units with paper or the like which device comprises in combination a rotatable working cylinder provided with shallow transverse grooves longitudinal with respect to the axis of the cylinder, suction channels entering the grooves for applying a reduced pressure to them thereby to retain the encircled units within the grooves, a fixed guide means presenting to the cylinder a working surface that is spaced from the cylinder and is coaxial therewith, and an abutment carried on the working surface of the guide means to extend into the space between the latter and the cylinder, the longitudinal axis of the abutment being parallel with the grooves of the cylinder.

2. A device for the encircling of cigarettes and filter units with paper in the course of manufacture of filter cigarettes substantially as hereinbefore described with reference to and as shown schematically in the accompanying drawing.

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1 SHEET *This drawing is a reproduction of the Original on a reduced scale*